

# Editorials

## Three Possible Futures for Medicine

THESE ARE TIMES of enormous change. Change is occurring almost everywhere. Quite simply, modern science and technology are responsible for the changes that are producing a new and different social, economic, and political world right before our eyes. This can be seen in medicine as well as in society. And the changes that are occurring in both medicine and society are inter-related. When these inter-relationships and interactions are examined, three possible related futures for medicine may be discerned.

One future will surely be *bioscience and hi-tech medicine*. Progress has been spectacular. It has mesmerized both the profession and the public. It has momentum. What may yet be accomplished by bioscience and hi-tech medicine boggles the mind. The possibilities will capture the imagination of medical scientists for a long time to come. But in medicine as in society, progress in science and technology is producing social, economic, and political changes that must be addressed. There are unmistakable signs that society is becoming disillusioned with what is being accomplished in health care, while at the same time generously supporting further scientific and technologic progress in medicine. The conquest of disease and prolongation of life have turned out to produce more illness and disability rather than less and at ever greater and now unacceptable cost. Scientific medicine is not satisfying many patients or much of the public. Patients are expecting better outcomes, and the public is expecting better results for the health dollars spent. Patients are beginning to take their personal care into their own hands, and the public is beginning to move health care itself into the public arena. Physicians are beginning to be viewed more and more as specialized and subspecialized technicians with all the social, economic, and political implications that this entails for the future of the profession. If bioscience and technology are not the end all, then what else may be in the future of medicine? If it is true that patients are expecting better outcomes and the public is expecting better results for their health dollars, then here may be found possibilities for two other futures for medicine.

What affects patient care outcomes besides biologic science and biotechnology? What has been called the "art" of medicine comes to mind. The art deals with such things as human behaviors, attitudes, cultural beliefs, interactions between physician and patient, interactions among health professionals, and the orchestrating of human and health care resources in patient care. This human side of patient care has received less study and attention than it deserves. There is a body of knowledge to be learned, and there are human skills to be acquired by physicians if they are to achieve the best in patient care outcomes and have satisfied patients, families, and third party payers of care. The art of medicine belongs on a par with bioscience and biotechnology as a vital part of modern medicine. Maybe it is time for a more disciplined approach to the neglected art. Perhaps it is time to develop the all-important human side of patient care as a *social science of medical practice*, a new social science that would be rooted in the practice, and with a new focus on all of the human factors that affect patient care outcomes. This could be a second possible future for medicine and perhaps a most

important one for the medical profession as modern patient care evolves in today's society.

Then the public is also expecting better health care results for the dollars spent. In a sense the public is in a role somewhat like a patient whose health status is not satisfactory and who needs a physician's help. Perhaps here is an opportunity, or even a need, for yet a third future for medicine, a new role of *medicine as physician to society*. Physicians are citizens with special training and special insights into what constitutes health and illness. They also have highly developed problem-solving skills, especially where the problems are complex and constantly changing. There is a potential for physicians collectively, through their medical societies and associations at various levels, to work with the larger society as they would with a patient, to help diagnose and then work collaboratively with society to treat a health ailment. The process is a familiar one: the chief complaint, history, examination, diagnostic studies, consultations as needed, a working diagnosis, agreement on a treatment plan, implementation of the treatment plan, monitoring of progress, making course corrections as necessary until the problem is solved or an acceptable steady state is reached. The process works in patient care, and, suitably adapted, it should work in societal health care.

It is not too soon to begin thinking about these possible futures of medicine. In the final analysis the role of medicine, and its scope and responsibility, will be determined by society and not by the profession. This has always been the case. But physicians can also influence events in patient care and health care. This also has always been the case. The profession has but to listen to the complaint and then respond with its science, its humanity, and its professional skills. These three possible futures open up new vistas for medicine, which may not be so new after all.

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## Hypertension in the Elderly

HYPERTENSION IN THE ELDERLY is commanding an increasing amount of attention—not surprisingly, given the upward shift taking place in the age distribution of our society and the epidemiology of elevated arterial pressures. This attention is nicely focused on the many areas surrounding the prevalence, significance, and management of hypertension in the elderly by Whitcomb and Byyny elsewhere in this issue.<sup>1</sup> The phenomenon of simultaneously declining fertility and mortality has led to a demographic transition in which experts foresee a doubling of the population aged 65 or older in the next 30 years. No matter which cutoff point is chosen to define hypertension in older persons, nor the number of measurements used to establish the diagnosis, any pathophysiologic process affecting 40% to 65% of an estimated 50 million persons in our society is a problem of enormous consequence. Prospective epidemiologic studies have established high blood pressure, and in particular high systolic pressure, as the single greatest risk factor in the elderly, except for age itself. Not only is it the strongest predictor of cardiovascular disease, but elderly persons, especially those with hypertension, are less likely to survive a cardiovascular event.

It is somewhat misleading to say that the cause of hypertension in the elderly is unknown. It is no more so than in younger persons given that essential hypertension rarely has its onset in the elderly. Hypertension in the elderly for the most part represents essential hypertension that developed in a younger person and persisted, with or without treatment, among survivors to an older age. Comparison studies of pathophysiology and hemodynamics in young and elderly hypertensive persons that ignore this are fraught with the potential for misleading inferences concerning etiology. A major real difference, of course, is the tendency for the systolic arterial pressure (unlike the diastolic) to continue to rise with age, but the structural factors responsible for this are not unknown. Other differences may only represent the effects of aging per se, or the consequences (adjustments) of chronic diastolic hypertension in survivors coupled with concomitant ischemic heart disease, or both. Only in isolated systolic hypertension, which typically occurs after age 60, can we really talk about differing causes and pathophysiology. For a better understanding of this, it would be of interest to study a group with borderline isolated systolic hypertension, that is, a diastolic blood pressure of less than 90 mm of mercury and a systolic blood pressure of 140 to 159 mm of mercury, in the decade before age 60. From this group will probably come the incident cases of isolated systolic hypertension in subsequent years. This is not to say that the different pathophysiologic profiles in younger and older hypertensive patients are not real or are unimportant. The differences have significant implications for the choice of therapy.

The evaluation of an elderly hypertensive patient involves an accurate determination of the baseline blood pressure and an assessment of possible end-organ damage and relevant concomitant disease. Whitcomb and Byyny appropriately emphasize the need to determine baseline as the average of several readings on more than one occasion and the importance of standing as well as sitting pressures. This is particularly important because of the greater within-individual variability of blood pressure with age. An inadequate number of blood pressure measurements before diagnosis leads both to overestimates of the prevalence in the literature and to overtreatment in practice. Although pseudohypertension has been said to be common in the elderly, studies to date do not instill confidence in this view. A failure to determine baseline pressures properly is probably a greater source of overestimating blood pressure levels than is pseudohypertension. The Osler maneuver need not be routine but reserved for those patients clinically suspected of having pseudohypertension. More important is checking peripheral pulses for signs of atherosclerosis and for signs of left ventricular hypertrophy as part of the assessment for end-organ damage.

Based on the randomized trials of the treatment of diastolic hypertension in the elderly cited by Whitcomb and Byyny, in addition to the studies by the Veterans Administration<sup>2</sup> and by Coope and Warrender,<sup>3</sup> it is rational to conclude that the evidence for a benefit from treatment, at least up to age 80, is as good as in younger patients and for those with diastolic pressures of 95 mm of mercury or greater. In fact, because of the much higher rate of events in the elderly, the same relative reduction (the intervention group versus the control) results in a much greater absolute reduction in cardiovascular morbidity and mortality in elderly compared with younger subjects. This conclusion represents an important recent advancement in our understanding. Just ten years

ago an editorial review in the *British Medical Journal* concluded "there is no evidence that treatment that decreases blood pressure alters prognosis in older hypertensives."<sup>4</sup> It is prudent, however, to be cautious in generalizing from clinical trials (where healthier patients tend to be the rule) to practice, where patients may be seen who are more ill or frail.

It is not appropriate to conclude that isolated systolic hypertension should be treated, based either on its known status as a risk factor or on the results from the randomized trials of treated diastolic hypertension. The differing pathophysiology, particularly the known structural vascular abnormalities in the elderly, including a loss of elasticity and atherosclerosis of major vessels, the potentially greater prevalence of both overt and silent ischemia and consequent myocardial dysfunction, raise concerns about potential adverse effects of antihypertensive therapy. Such concerns include the possible impairment of blood flow to vital organs as well as the potential for a compromised quality of life.

In the pilot study for the Systolic Hypertension in the Elderly Program (SHEP) involving 551 elderly subjects with isolated systolic hypertension, treatment with a diuretic was shown to be effective in lowering the systolic blood pressure and was well-tolerated and safe.<sup>5</sup> Although there was an encouraging trend in cardiovascular event reduction, including stroke, it was not statistically significant and there was no reduction in the incidence of either coronary heart disease or total mortality. The pilot study was not designed with the statistical power to address the question of the benefit of therapy, and we must await the results of the full-scale SHEP trial, scheduled for completion in 1991, before making definitive recommendations on the treatment of isolated systolic hypertension. During the interval we must exercise our clinical judgment in making decisions on the treatment of individual patients.

"Individualizing the treatment of hypertension in the elderly, based on clinical characteristics and coexisting conditions," may be even more important than in younger patients.<sup>1</sup> The underlying pathophysiology and hemodynamics favor choosing drugs that lower peripheral vascular resistance and have few central nervous system side effects. In the absence, however, of a specific contraindication or a specific indication for an alternative agent based on a coexisting condition, low-dose diuretics remain the preferred choice in the elderly because they are inexpensive, can be taken once a day, and are of proven long-term benefit.

Angiotensin-converting enzyme inhibitors are effective agents in the elderly, have an excellent quality of life profile, and are a particularly good choice in patients with congestive heart failure or diabetes mellitus. Calcium channel blockers are theoretically an ideal class of antihypertensive agents for the elderly, but definitive comparative data from controlled clinical trials of adequate size are not available.  $\beta$ -Blockers, central  $\alpha$ -agonists, and  $\alpha_1$ -antagonists all have features that relegate them to a lower choice than those discussed above. With all pharmacologic agents for treating the elderly with hypertension, the prudence of starting with very low doses and increasing the dose gradually cannot be stated too often.

The goal or level to which the arterial pressure is lowered may be as important as the choice of agent(s). A J-shaped relationship between the treated level of diastolic pressure and mortality from myocardial infarction has been observed recently in several data sets.<sup>6</sup> Higher rates of myocardial

infarction occurred among those patients with the lowest achieved pressure than in those with more modest lowering. Strandgaard and Haunsø have postulated that the impaired coronary artery reserve, particularly in the subendocardial layer during diastole, resulting from too vigorous lowering of the diastolic blood pressure may explain why antihypertensive treatment protects patients against stroke but not against myocardial infarction.<sup>7</sup> Inconsistencies in the findings among the studies, perhaps due to unknown confounding factors, preclude firm conclusions on this issue at present. Nonetheless, it seems prudent not to be overly aggressive in treating hypertension in elderly patients.

Most of the clinical intervention trials in the elderly with hypertension have shown only modest or no reduction in overall mortality despite reductions in morbidity and mortality rates from cardiovascular disease or stroke, or both. Indeed, sample size considerations may preclude a definitive demonstration of such benefit in the elderly given that age itself is the most powerful risk factor and other competing risks abound. If it is unlikely that life expectancy can be extended significantly, quality-of-life considerations become paramount. Such considerations must include measures of social, emotional, and cognitive functioning and symptoms

of the disease or its treatment. For older hypertensive patients, the choice of an antihypertensive regimen least likely to adversely affect the quality of life may be the most important consideration.

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